

Unit 6 - Week 4

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Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-10-14, 23:59 IST.

1) If D, W, S represent the dry weight, moisture saturated weight, and weight suspended in water of an object, then its apparent porosity may be measured by: 2 points

- a. $\frac{D}{(D-S)}$
- b. $\frac{D}{(W-S)}$
- c. $\frac{(W-D)}{(W-S)}$
- d. $\frac{W}{(W-S)}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

2) DTA in thermal analysis does the following job: 2 points

- a. Identify the temperature range for moisture removal
- b. Identify the temperature at which phase transformation initiates
- c. It also provides the heat of transformation
- d. Record the speed of weight change with time

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

b.

3) Identify the factor(s) that enhances the overall efficacy of PCI: 2 points

- a. High blast temperature
- b. Atleast 80% of coal fines below 200 mesh
- c. Very high VM
- d. Wet coal fines

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

b.

4) Finest dust particles present in blast furnace gas is removed by : 2 points

- a. Dust catcher
- b. Wet scrubber
- c. Electrostatic precipitator
- d. Hydrocyclone

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

5) Arrange the following refractory materials in descending order of their melting point 2 points

P. Alumina; Q. Silico; R. Carbon; S. Zirconia

- a. R>P>Q>S
- b. S>R>Q>P
- c. R>S>P>Q
- d. P>S>R>Q

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

6) The main area of fuel economy in blast furnace operation is to reduce the 2 points

- a. gaseous fuel consumption in stove
- b. coke rate
- c. sensible heat loss from blast furnace
- d. coke dust losses in outgoing blast furnace gas

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

7) Which has the highest % Fe 2 points

- a. Hematite
- b. Magnetite
- c. Limonite
- d. Iron pyrite

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

8) The nucleation of fine particles in pelletizing process occurs due to 2 points

- a. Gravity force
- b. Impact force
- c. Centrifugal force
- d. Capillary force

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

9) An ideal burden for blast furnace should have 2 points

- a. Low percentage of fines and close size range
- b. Low softening temperature and wide range of softening
- c. High moisture content
- d. High reducibility

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

d.

10) Pellets are not as popular a burden as sinter in the iron blast furnace because of their 2 points

- a. shape
- b. swelling tendency
- c. higher cost
- d. low mechanical strength

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

c.

11) M10 index of coke indicates 2 points

- a. compressive strength
- b. hardness
- c. abrasion strength
- d. impact strength

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

12) A non-recovery coke oven has the following features: 2 points

- a. produces Coke Oven Gas (COG)
- b. Produces electricity
- c. Requires more floor space
- d. Requires sole flues

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

c.

d.

Common data for question 13 & 14

For sintering in a fixed bed, given data: permeability $2.2 \times 10^{-6} \text{ m}^2/\text{N-sec}$, suction (ΔP) = 1000 mm of water, bed depth (H) = 50 cm, Void fraction of sinter = 0.3, mean specific heat of gas = $3.0 \times 10^4 \text{ cal/cc}^\circ\text{C}$. Solid charge consists of 50% Hematite, 40% return sinter, 5% coke, 5% moisture and specific heat of hematite, sinter, coke and moisture are 0.76, 0.9, 1.0, 4.2 J/gm $^\circ\text{C}$, respectively.

13) Determine the air flow rate in Nm 3 /m 2 -min during sintering in a fixed bed. 3 points

- a. 1.464 Nm 3 /m 2 -min
- b. 2.590 Nm 3 /m 2 -min
- c. 3.768 Nm 3 /m 2 -min
- d. 4.867 Nm 3 /m 2 -min

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

14) Determine the time of sintering. Assume condition of matching. 4 points

- a. 120 min
- b. 130 min
- c. 108 min
- d. 88 min

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.